

SensIT: Sensor Information Technology

Untethered **micro sensors** will go anywhere and measure anything - traffic flow, water level, number of people walking by, temperature. This is developing into something like a nervous system for the earth, a skin for the earth. The world will **evolve** this way.

Horst Stormer

Lucent Technology, Inc.

*21 Ideas for the 21st Cent. **Business Week.** 8/23-30, 1999*

PM: Sri Kumar

DARPA/ITO

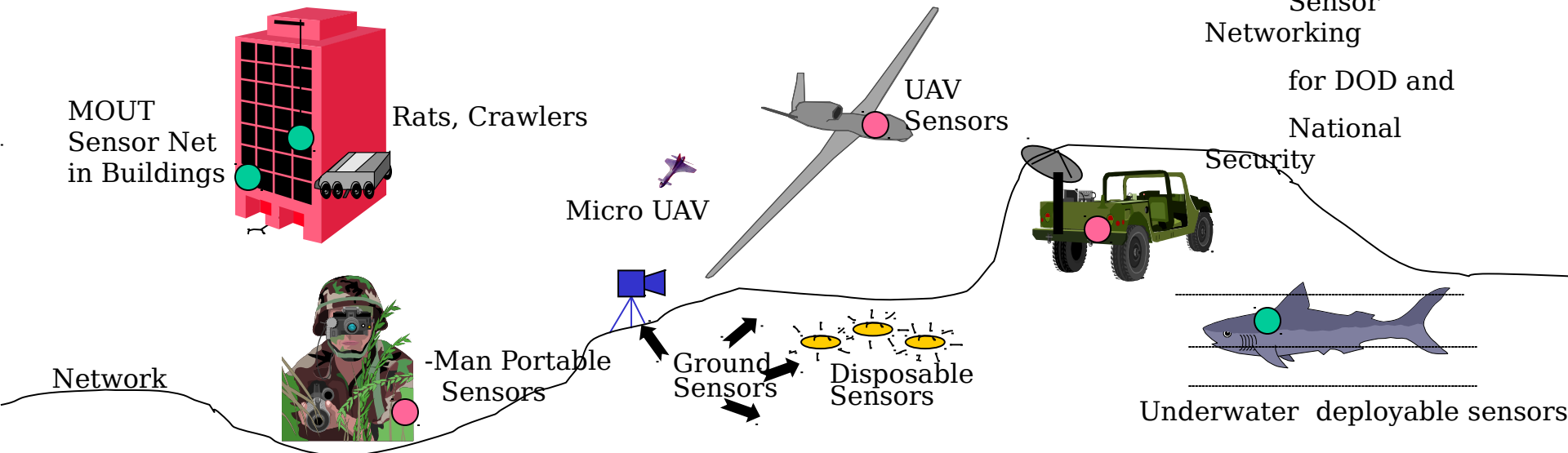
II Meeting

October 7-8

Marina Del Ray CA

Program Emphasis:

Sensor
Networking
for DOD and
National
Security

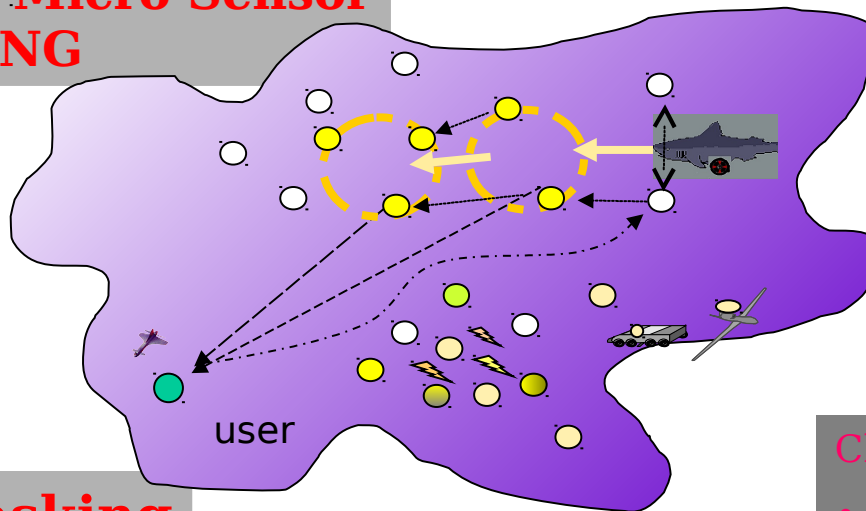


SensIT: Sensor Information Technology

Mission

Networking and Software for Distributed Micro Sensors.

Large Scale Micro Sensor NETWORKING



Theater (Low-Latency)
Surveillance
CBM (Low-Cost)
Different Requirements

Software Integration Experimentation

Query/Tasking

**Collaborative
Signal
Processing**

Challenge Example:

- Ground Moving Targets
- Fast Detection Tracking
- Low-Latency Networking

Networking

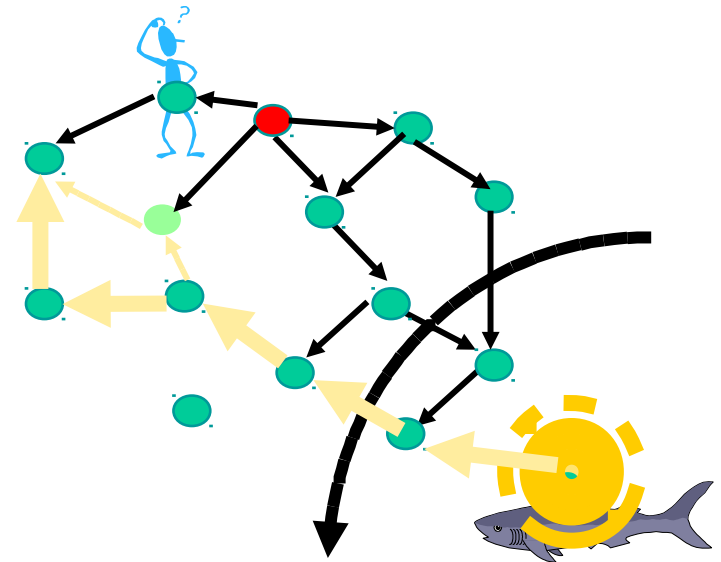
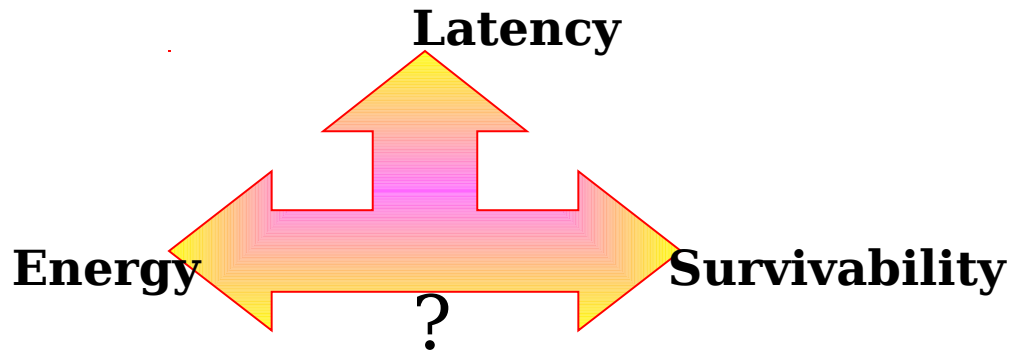
Requirements

- Self assembled, Scalable, Dynamic
 - Minimal configuration
 - No large route tables
- Optimized: Energy, BW
- Survivable, Secure

New Ideas

Diffusion Networking

Local/neighbor
interactions
Directed
Gradients



**Best Operating
regimes?
Deployment
Density/Size?
scaling effects**

Querying and Tasking

- Develop Simple User Interface

- Query/Tasking Language
- GUI

- Query/Task processing

Distributed

- Distributed micro database

Data Organization

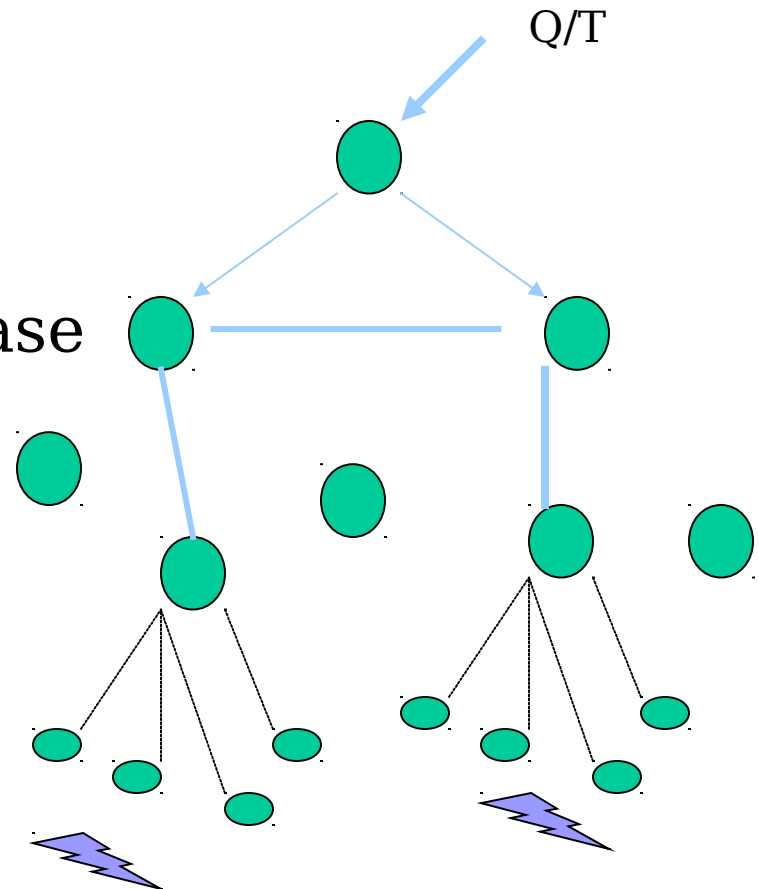
Placement and Caching

Scalable - Devices, Query.

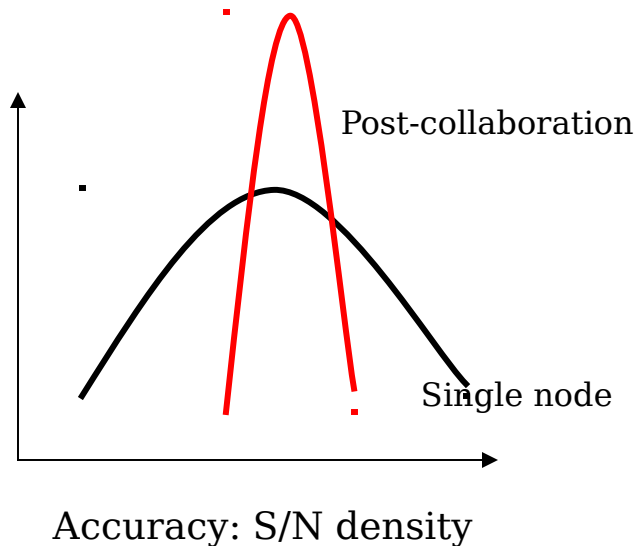
- Capacity

Response Time?

How many signatures?



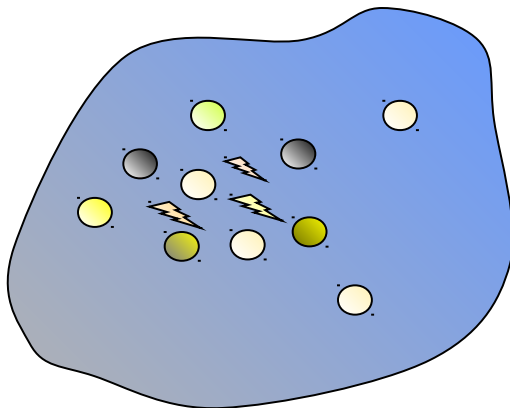
Collaborative Signal Processing



- Exploit Dense Spatial Sampling
 - Networked Consensus

- Distributed Algorithms
 - Asynchronous
 - Progressive accuracy
 - Efficient: energy, BW, MIPs

- Deployment Density
 - Detection efficiency
 - Returns to Scale?
 - Average/Square mile?



This Meeting

- Today (Oct 7th): 4 sessions

- Networking (Estrin)
- Networked Signal Processing (Sri)
 - Special Talk: Al Oppenheim
- Query/Tasking; Sensorware (Sheshadri)
- New Ideas/Challenges/Clients (Kaminski)

[**Eve: special groups - PIs only]

- Tomorrow (Oct 8th): 3 sessions

- Platform/Hardware: current and future (Parker)
- Smart Spaces (Graff)
- Integration/Experimentation (BBN)

[**After Lunch: PIs Only]